

# PATENT ABSTRACTS OF JAPAN

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(22)Date of filing : 24.04.1992 (72)Inventor : SUGANO TOMIO

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## (54) PICTURE RECEIVING ANTENNA

### (57)Abstract:

PURPOSE: To effectively prevent the production of a multiple image (ghost) even in an area having lots of reflection waves such as midtown area.

CONSTITUTION: The incidence of a reflecting wave causing a multiple image is prevented by dispersing conductive particles or glass particles 11 in a weather-proof film 10 of an antenna element 3 so as to reflect irregularly most of the reflecting waves made incident in the antenna element 3 with the conductive particles or eliminating the reflecting wave with the filter effect of the glass particles.

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**CLAIMS**

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[Claim(s)]

[Claim 1] The antenna for televising characterized by distributing a conductive  
particle in the weatherability coat of the above-mentioned antenna element in the

antenna for televising which comes to combine the antenna element which covered the front face of a metal cylindrical base with the weatherability coat.  
[Claim 2] The antenna for televising characterized by distributing a glass particle in the weatherability coat of the above-mentioned antenna element in the antenna for televising which comes to combine the antenna element which covered the front face of a metal cylindrical base with the weatherability coat.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] When this invention is further explained in full detail about the antenna for televising which receives the VHF wave which comes to combine two or more antenna elements which consist of a metal pipe covered with the weatherability coat, and a UHF wave, it relates to preventing generating of a multiplex image (ghost) as much as possible or the made antenna for televising.

[0002]

[Description of the Prior Art] Generally what combined conventionally the antenna element (element) which comes to cover an aluminum pipe with a

weatherability coat as a TV antenna for VHF and UHF wave reception is used, and the antenna of the structure specifically shown in drawing 1 is common.

[0003] Namely, attach sideboom 2 in a mast 1, install two or more antenna elements 3 in the end side of this sideboom 2 side by side, and the wave director 4 is constituted. The radiation machine 5 which consists of a flat ring-like antenna element is attached behind this wave director 4. Furthermore, it considers as the configuration which formed the reflector 7 by the antenna element 3 attached in the both ends of the vertical boom 6 attached at the right angle behind this radiation machine 5 at sideboom 2, and the other end of sideboom, respectively.

[0004] This antenna for televising prevents with a reflector 7 that lead a principal wave A to the radiation machine 5 with the wave director 4, and the reflected wave B from back or the upper part goes into the radiation machine 5. And the electric wave which carried out incidence to the radiation machine 5 is introduced into television equipment (television) with feeder wire 8, and is converted into a video signal.

[0005]

[Problem(s) to be Solved by the Invention] There are sometimes few being highly sensitive for the important thing as engine performance required of the antenna for televising, multiplex images (ghost), and noises. Although the antenna which has the recent years very high engine performance is increasingly supplied about sensibility and a noise among these engine performance, about a multiplex image (ghost), the engine performance enough satisfied by the operating environment of an antenna etc. may not be obtained.

[0006] Namely, although the conventional antenna has prevented a ghost's generating by preventing that the reflected wave from the upper part or back goes into the radiation machine 5 as mentioned above with the reflector 7 formed behind the radiation machine 5 Although generating of a multiplex image (ghost) can be prevented with such a method when the most It is difficult for very many reflected waves to reach an antenna from all include angles, and to fully prevent the incidence of a reflected wave only with the conventional reflector in the center

of Tokyo which buildings, such as a building, are built and is located in a line.

[0007] This invention was made in view of the above-mentioned situation, and aims at offering the new antenna for televising which can prevent generating of a multiplex image (ghost) as much as possible also in an area with many reflected waves, such as a city area.

[0008]

[Means for Solving the Problem] This invention offers the antenna for televising characterized by distributing a conductive particle in the weatherability coat of the above-mentioned antenna element in the antenna for televising which comes to combine the antenna element which covered the front face of a metal cylindrical base with the weatherability coat as the 1st invention in order to attain the above-mentioned purpose.

[0009] Moreover, in the antenna for televising which comes to combine the antenna element which covered the front face of a metal cylindrical base with the weatherability coat as the 2nd invention, the antenna for televising characterized by distributing a glass particle in the weatherability coat of the above-mentioned antenna element is offered.

[0010]

[Function] According to the antenna concerning the 1st above-mentioned invention, scattered reflection of most reflected waves which carry out incidence to this antenna element is carried out by the conductive particle distributed in the weatherability coat of an antenna element, it declines by it, and the incidence of the reflected wave which causes a multiplex image phenomenon is prevented.

[0011] Moreover, according to the antenna concerning the 2nd above-mentioned invention, the glass particle distributed in the weatherability coat of an antenna element does the screen effect so, scattered reflection of most reflected waves which carry out incidence to this antenna element is carried out, it declines, and the incidence of the reflected wave which causes a multiplex image (ghost) phenomenon is prevented.

[0012] Although a principal wave will naturally also be decreased here by the

conductive particle and glass particle which were distributed in the weatherability coat of the above-mentioned antenna element A reflected wave and a principal wave carrying out incidence of most principal waves with large reinforcement, since the reinforcement differs greatly As for the reflected wave with small reinforcement, it is possible to make it decrease, so that an image is hardly affected, and by high performance-ization of television equipment (television) in recent years, even if the incidence reinforcement of a principal wave decreases some, it can reproduce a clear image.

[0013] Moreover, since the device which makes the antenna element itself which constitutes this antenna decrease the incidence reinforcement of a reflected wave is made, the antenna of this invention can act effective also in the reflected wave which carries out incidence from all directions, and, for this reason, can prevent generating of a multiplex image (ghost) very effectively also in the center of Tokyo as for which many reflected waves carry out incidence from all include angles.

[0014]

[Example] Hereafter, an example is shown and this invention is explained more concretely. Drawing 1 and drawing 2 show the antenna for televising for VHF waves concerning one example of this invention, and this antenna is considered as the configuration which showed the antenna element 3 which constitutes the wave director 4, the radiation machine 5, and a reflector 7 to drawing 2 . In addition, other configurations are as having mentioned above.

[0015] Drawing 2 shows the antenna element 3 which constitutes the antenna of above-mentioned drawing 1 , and it distributes to homogeneity the particulate material 11 which consists of a conductive particle or a glass particle into this weatherability coat 10 while it covers with the weatherability coat 10 the outside surface of the base 9 which consists of a metal pipe.

[0016] Here, although which thing is sufficient as it as long as a particulate material 11 carries out scattered reflection of the VHF wave as a conductive particle, although a conductive particle or a glass particle is used, and it does not

have especially a limit, aluminum, titanium, carbon, etc. are specifically mentioned, it is lightweight especially, and since it excels in endurance, aluminum is used suitably. Moreover, although especially the particle diameter of these conductivity particle and a glass particle is not limited, it can usually be set to about 0.01-0.1mm.

[0017] Moreover, although especially the variance of these particulate materials 11 is not limited, it is desirable to consider as 20 to 30 volume % especially below 50 volume % of a weatherproof coat. In this case, if the amount of particulate materials exceeds 50 volume %, the incidence reinforcement of a principal wave declines greatly, a clear image may not no longer be obtained, and on the other hand, if there is extremely little variance, incidence of a reflected wave may be unable to be prevented good.

[0018] In addition, the weatherability coat 10 can be used as the coat of 0.5-1.5mm thickness extent which consists of the usual quality of the materials, such as a vinyl-chloride-resin system coat. Moreover, a base 9 can also be made to be the same as that of the usual antenna elements, such as an aluminum pipe. Furthermore, although it can also consider as the base of the shape of a rod which does not have a centrum depending on the case, it usually considers as the shape of a pipe from a lightweight viewpoint.

[0019] The glass particle 11 which scattered reflection of most reflected waves which carry out incidence to this antenna element was carried out by the conductive particle 11 which was distributed in the weatherability coat 10 of an antenna element 3 according to this antenna for televising, or was distributed to ten in a weatherability coat does the screen effect so, most reflected waves which carry out incidence to this antenna element 3 in this way decline scattered reflection or by being absorbed, and the incidence of the reflected wave which causes a multiplex image phenomenon is prevented.

[0020] In this case, although a principal wave will naturally also be decreased by the conductive particle and the glass particle 11 which were distributed in the weatherability coat 10 of the above-mentioned antenna element 3 A reflected

wave and a principal wave carrying out incidence of most principal waves with large reinforcement, since the reinforcement differs greatly As for the reflected wave with small reinforcement, it is possible to make it decrease, so that an image is hardly affected, and by high performance-ization of television equipment (television) in recent years, even if the incidence reinforcement of a principal wave decreases some, it can reproduce a clear image.

[0021] Furthermore, since the device which makes antenna element 3 the very thing decrease the incidence reinforcement of a reflected wave is made according to the antenna of this example, it can act effective also in the reflected wave which carries out incidence from all directions, and, for this reason, many reflected waves can prevent generating of a multiplex image (ghost) very effectively also in the center of Tokyo which carries out incidence from all include angles.

[0022] In addition, although the antenna for televising of this invention is not limited to the above-mentioned example, and the configuration of the antenna element which constitutes the number of the antenna element 3 which constitutes the wave director 4 and a reflector 7, combination, and the radiation machine 5 etc. could be changed suitably and the above-mentioned example showed the antenna for VHF waves, the antenna for UHF can also be constituted using the antenna element which has the structure of above-mentioned drawing 2 . Furthermore, although considered as the structure which showed all the antenna elements to drawing 2 in the above-mentioned example, only the antenna element of the radiation machine 5 can also be made into the structure of drawing 2 , and unless other configurations also deviate from the summary of this invention, it changes variously and does not interfere.

[0023]

[Effect of the Invention] As explained above, according to the antenna for televising of this invention, also in the center of Tokyo which many reflected waves generate from all include angles, the incidence reinforcement of a reflected wave can be decreased as much as possible, generating of a multiplex



image (ghost) can be prevented as much as possible, and a clear image can be obtained.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the perspective view showing the antenna for televising concerning one example of this invention.

[Drawing 2] It is the sectional view showing the antenna element which constitutes the antenna for the said televising.

[Description of Notations]

- 1 Mast
- 2 Sideboom
- 3 Antenna Element
- 4 Wave Director
- 5 Radiation Machine
- 6 Vertical Boom
- 7 Reflector
- 8 Feeder Wire

9 Metal Pipe (Base)

10 Weatherproof Coat

11 Conductive Particle or Glass Particle

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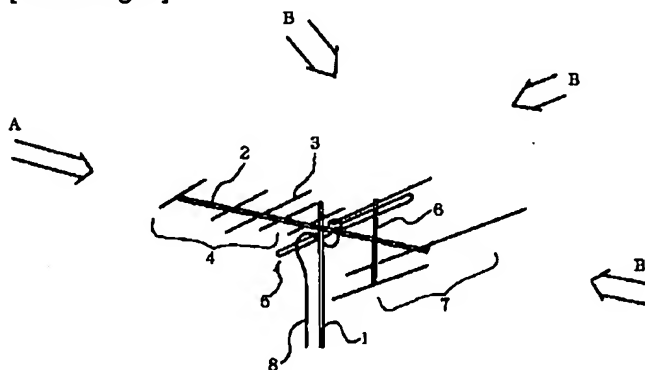
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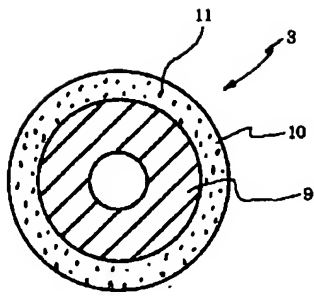
DRAWINGS

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[Drawing 1]



[Drawing 2]



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(54) 【発明の名称】 受像用アンテナ

(57) 【要約】

【目的】 都心部等の反射波が多い地域でも多重像（ゴースト）の発生を効果的に防止する。

【構成】 アンテナ素子3の耐侯性皮膜10中に導電性粒子又はガラス粒子11を分散し、該アンテナ素子3に入射して来る反射波の大部分を導電性粒子で乱反射させ、又はガラス粒子のフィルター効果により除去し、多重像現象を引き起こす反射波の入射を防止する。

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## 【特許請求の範囲】

【請求項1】 金属製棒状基体の表面を耐候性皮膜で被覆したアンテナ素子を組み合わせてなる受像用アンテナにおいて、上記アンテナ素子の耐候性皮膜中に導電性粒子を分散したことを特徴とする受像用アンテナ。

【請求項2】 金属製棒状基体の表面を耐候性皮膜で被覆したアンテナ素子を組み合わせてなる受像用アンテナにおいて、上記アンテナ素子の耐候性皮膜中にガラス粒子を分散したことを特徴とする受像用アンテナ。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】本発明は、耐候性皮膜で被覆した金属製パイプからなるアンテナ素子を複数本組み合わせてなるVHF波やUHF波を受信する受像用のアンテナに関し、更に詳述すると、多重像（ゴースト）の発生を可及的に防止することかできる受像用アンテナに関する。

## 【0002】

【従来の技術】従来より、VHF、UHF波受信用のテレビアンテナとしては、アルミニウムパイプを耐候性皮膜で被覆してなるアンテナ素子（エレメント）を組み合わせたものが一般に用いられており、具体的には図1に示した構造のアンテナが一般的である。

【0003】即ち、マスト1に横ブーム2を取り付け、この横ブーム2の一端側に複数のアンテナ素子3を並設して導波器4を構成し、この導波器4の後方に扁平リング状のアンテナ素子からなるふく射器5を取り付け、更に、このふく射器5の後方に横ブーム2に直角に取り付けた縦ブーム6の両端及び横ブームの他端にそれぞれ取り付けたアンテナ素子3により反射器7を形成した構成とされている。

【0004】この受像用アンテナは、導波器4により主波Aをふく射器5に導き、また後方や上方からの反射波Bがふく射器5に入るのを反射器7で防止するようになっている。そして、ふく射器5に入射した電波は、フィード線8により受像装置（テレビ）に導入され、映像化される。

## 【0005】

【発明が解決しようとする課題】受像用のアンテナに要求される性能として重要なものに感度がよいこと、多重像（ゴースト）、雑音が少ないことがある。これらの性能のうち感度、雑音に関しては、近年非常に高い性能を有するアンテナが供給されるようになってきているが、多重像（ゴースト）については、アンテナの使用環境などにより十分満足される性能が得られない場合がある。

【0006】即ち、従来のアンテナは、上述のように、ふく射器5の後方に形成した反射器7により上方や後方からの反射波がふく射器5に入るのを防止することにより、ゴーストの発生を防止しているが、このような方式によりたいていの場合、多重像（ゴースト）の発生を

防止することができるが、ビル等の建造物が建ち並ぶ都心部などでは、あらゆる角度から非常に多くの反射波がアンテナに届き、従来の反射器だけでは、十分に反射波の入射を防止することが困難である。

【0007】本発明は、上記事情に鑑みなされたもので、市街地等の反射波が多い地域でも多重像（ゴースト）の発生を可及的に防止することができる新規な受像用アンテナを提供することを目的とする。

## 【0008】

10 【課題を解決するための手段】本発明は、上記目的を達成するため、第1の発明として金属製棒状基体の表面を耐候性皮膜で被覆したアンテナ素子を組み合わせてなる受像用アンテナにおいて、上記アンテナ素子の耐候性皮膜中に導電性粒子を分散したことを特徴とする受像用アンテナを提供する。

【0009】また、第2の発明として、金属製棒状基体の表面を耐候性皮膜で被覆したアンテナ素子を組み合わせてなる受像用アンテナにおいて、上記アンテナ素子の耐候性皮膜中にガラス粒子を分散したことを特徴とする受像用アンテナを提供する。

## 【0010】

20 【作用】上記第1の発明にかかるアンテナによれば、アンテナ素子の耐候性皮膜中に分散した導電性粒子により、該アンテナ素子に入射して来る反射波の大部分が乱反射されて減衰し、多重像現象を引き起こす反射波の入射が防止される。

【0011】また、上記第2の発明にかかるアンテナによれば、アンテナ素子の耐候性皮膜中に分散したガラス粒子がフィルター効果を奏し、該アンテナ素子に入射して来る反射波の大部分が乱反射されて減衰して、多重像（ゴースト）現象を引き起こす反射波の入射が防止される。

【0012】ここで、上記アンテナ素子の耐候性皮膜中に分散した導電性粒子やガラス粒子により主波も当然に減衰することになるが、反射波と主波とはその強度が大きく異なるので、強度の大きい主波の大部分を入射させつつ、強度の小さい反射波はほとんど映像に影響を及ぼさないほどに減衰させることが可能であり、また近年の受像装置（テレビ）の高性能化により、主波の入射強度が多少減衰しても鮮明な画像を再生することができる。

【0013】また、本発明のアンテナは、該アンテナを構成するアンテナ素子自体に反射波の入射強度を減衰させる工夫がなされているので、あらゆる方向から入射して来る反射波にも有効に作用し、このためあらゆる角度から多数の反射波が入射して来る都心部においても極めて効果的に多重像（ゴースト）の発生を防止することができる。

## 【0014】

【実施例】以下、実施例を示して本発明をより具体的に説明する。図1及び図2は、本発明の一実施例にかかる

VHF波用の受像用アンテナを示すもので、このアンテナは導波器4、ふく射器5及び反射器7を構成するアンテナ素子3を図2に示した構成としたものである。なお、その他の構成は上述した通りである。

【0015】図2は、上記図1のアンテナを構成するアンテナ素子3を示すものであり、金属製パイプからなる基体9の外表面を耐候性皮膜10で被覆すると共に、この耐候性皮膜10中に導電性粒子又はガラス粒子からなる分散粒子11を均一に分散したものである。

【0016】ここで、分散粒子11は導電性粒子又はガラス粒子が用いられるが、導電性粒子としては、VHF波を乱反射させるものであればいずれのものでもよく、特に制限はないが、具体的にはアルミニウム、チタン、カーボンなどが挙げられ、中でも軽量で耐久性に優れることからアルミニウムが好適に用いられる。また、これら導電性粒子及びガラス粒子の粒子径は、特に限定されるものではないが通常0.01~0.1mm程度とすることができる。

【0017】また、これら分散粒子11の分散量は、特に限定されるものではないが耐候性皮膜の50体積%以下、特に20~30体積%とすることが好ましい。この場合、分散粒子量が50体積%を超えると主波の入射強度が大きく減衰し、鮮明な画像が得られなくなる場合があり、一方分散量が極端に少ないと反射波の入射を良好に防止することができない場合がある。

【0018】なお、耐候性皮膜10は塩化ビニル樹脂系皮膜等の通常の材質からなる0.5~1.5mm厚程度の皮膜とすることができる。また、基体9もアルミニウムパイプ等の通常のアンテナ素子と同様にすることができる。更に、場合によっては中空部を有しない棒状の基体とすることもできるが、軽量かの観点から通常はパイプ状とされる。

【0019】この受像用アンテナによれば、アンテナ素子3の耐候性皮膜10中に分散した導電性粒子11により、該アンテナ素子に入射して来る反射波の大部分が乱反射され、又は耐候性皮膜中10に分散したガラス粒子11がフィルター効果を奏し、このように該アンテナ素子3に入射して来る反射波の大部分が乱反射又は吸収されることにより減衰して、多重像現象を引き起こす反射波の入射が防止される。

【0020】この場合、上記アンテナ素子3の耐候性皮膜10中に分散した導電性粒子やガラス粒子11により主波も当然に減衰することになるが、反射波と主波とはその強度が大きく異なるので、強度の大きい主波の大部分を入射させつつ、強度の小さい反射波はほとんど映像

に影響を及ぼさないほどに減衰させることが可能であり、また近年の受像装置（テレビ）の高性能化により、主波の入射強度が多少減衰しても鮮明な画像を再生することができるものである。

【0021】更に、本実施例のアンテナによれば、アンテナ素子3自体に反射波の入射強度を減衰させる工夫がなされているので、あらゆる方向から入射して来る反射波にも有効に作用し、このためあらゆる角度から多数の反射波が入射して来る都心部においても極めて効果的に多重像（ゴースト）の発生を防止することができる。

【0022】なお、本発明の受像用アンテナは上記実施例に限定されるものではなく、導波器4、反射器7を構成するアンテナ素子3の本数や組合せ、ふく射器5を構成するアンテナ素子の形状等は適宜変更することができる。また上記実施例ではVHF波用のアンテナを示したが、上記図2の構造を有するアンテナ素子を用いて、UHF用アンテナを構成することもできる。更に、上記実施例では、すべてのアンテナ素子を図2に示した構造としたが、ふく射器5のアンテナ素子のみを図2の構造とすることもでき、その他の構成も本発明の要旨を逸脱しないかぎり種々変更して差し支えない。

【0023】

【発明の効果】以上説明したように、本発明の受像用アンテナによれば、あらゆる角度から多数の反射波が発生する都心部等においても反射波の入射強度を可及的に減少させ、多重像（ゴースト）の発生を可及的に防止して鮮明な画像を得ることができるものである。

【図面の簡単な説明】

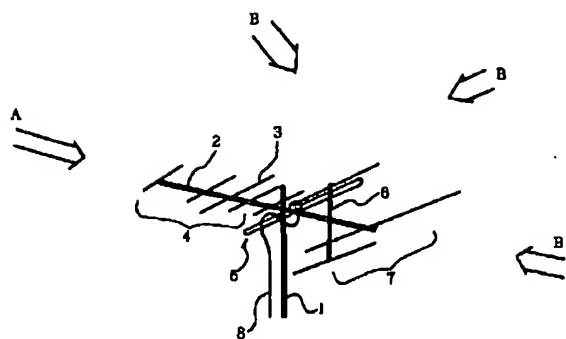
【図1】本発明の一実施例にかかる受像用アンテナを示す斜視図である。

【図2】同受像用アンテナを構成するアンテナ素子を示す断面図である。

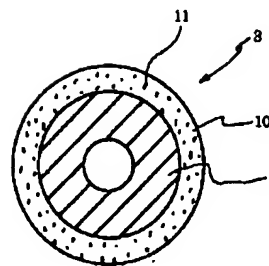
【符号の説明】

- 1 マスト
- 2 横ブーム
- 3 アンテナ素子
- 4 導波器
- 5 ふく射器
- 6 縦ブーム
- 7 反射器
- 8 フィーダー線
- 9 金属製パイプ（基体）
- 10 耐候性皮膜
- 11 導電性粒子又はガラス粒子

【図1】



【図2】



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